

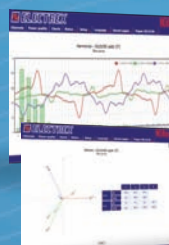
# ELECTREX

the energy saving technology



ENERGY BRAIN  
SOFTWARE

INTERNAL  
WEB SERVER



cloud



EXPBUS MULTI-MASTER PORT  
HIGH SPEED, RELIABLE COMMUNICATION

ALARM

PROCESS SENSORS

ON / OFF SWITCH

ENVIRON. SENSORS

PULSE COUNTER

I-O MANAGEMENT



WiFi



## OPERATING TIME COUNTER

For monitoring the operating time of a load/appliance and the relative amount of energy consumed. Up to 4 partial time counters are triggered every time the power consumption exceeds a certain threshold or from the ON/OFF state of an electrical contact via the inputs provided on the smart energy analyzer.



## CALENDARS

This feature allows to define calendars for multiple applications (for e.g. tariffs). Together with the Energy Automation option can be used to setup automated tasks related to measurements and/or events detected or provided via the I/O module.



## ALARM & E-MAIL NOTIFICATIONS

This feature allows to manage alerts considering simultaneously more parameters like threshold values, I/O states, custom calendars and the sending of e-mail notifications and local or remote commands for controlling I/O modules.



RS485 PORT  
MODBUS RTU FULL COMPLIANT  
PROTOCOL



## ENERGY MONITORING

Meeting the most demanding applications of electrical energy monitoring (quantity and quality), other energy carriers (gas, water, compressed air, etc.), environmental and process parameters in the industry, commercial, residential, public buildings and renewable energy sectors.

## POWER QUALITY ANALYSIS

Detection and logging of sags, swells, interruptions providing a graphical view of the single or total events registered on a time-line. Automatic classification of each event on the UNIPEDE table. Custom measurement campaigns of the harmonics and the main electrical parameters.

## ENERGY AUTOMATION

Automation tasks programmable via the web interface running within the device for implementing complex Energy Automation functions for achieving higher energy efficiency results from any technological system.

GAS

WATER

CALORIES

°C

HUMIDITY

LUX



made in italy



# Kilo D6 / Kilo 96: Power Quality Energy Analyzer & (Wi-Fi) Web Data Manager

- High Performance (Accuracy Class 0,5S)
- Flexibility (open platform)
- Reliability (high quality of components)
- Connectivity (RS485, ExpBus, Ethernet, Wi-Fi, NFC)
- For continuous monitoring (E.g. ISO 50001)
- Energy efficiency (E.g. EU directive - Energy Efficiency Certificates)

## KILO D6 / KILO 96

Energy Analyzer & Data Manager microprocessor based (Dual Core Cortex-M4) outstanding flexibility and accuracy designed to meet the most demanding applications of monitoring of electrical parameters and electrical energy management.

Continuously sampling the waveforms of voltages and currents with a very high resolution, thus ensuring the maximum accuracy even in the presence of rapidly varying loads in time (e.g. spot welding).

## VERSATILITY

Suitable for virtually all type of electrical grid systems, single phase, bi-phase, three phase 3- and 4-wires, symmetrical and asymmetrical, balanced or unbalanced, LV/MV, with 1, 2 or 3 CTs as well as for 2 and 4 quadrant (import/export) measurement.

## HARMONICS UP TO THE 51<sup>ST</sup> ORDER

The Kilo H displays also the single harmonics up to the 51<sup>st</sup> order for the 3 voltages and currents per each phase, 3 active powers of each phase with the sign (+or-) that denotes the direction of the harmonic. FFT method calculation of the harmonics, for amplitude and phase.

## POWER QUALITY (CLASS S - EN 61000-4-30)

The Kilo PQ detects and logs various events with a resolution of one cycle (with date / time \* of each event, type of event, phase involved, duration, min / max value reached during the event and UNIPEDE classification) useful for monitoring the quality of energy (functions related also to the EN 50160 and EN 61000-4-30 standards for the S class). The parameters for defining abnormal events are programmable. Event types:

- Voltage Dips
- Voltage Swells
- Over-current and its direction
- Interruptions



## EVENT'S GRAPHIC DETAIL (KILO NET WEB)

In the Kilo net PQ Web Charts in addition to the list of PQ events displayed in the web interface (available on the Kilo net PQ Web) it is included also the functionality named "event's graphic detail" that allows to record and display the trends of the beginning and end of the event with a time frame of a second (programmable).

## EVENTS TIMELINE AND THE UNIPEDE TABLE

Display of a time line of the succession of events and diagram of distribution of events based on the % of the parameter considered in relation to its reference value and duration, according to the dictates of UNIPEDE (International Union of Producers and Distributors of Energy - <http://www.eurelectric.org/>).



## CONFORMITY WITH EN 50470 NORMATIVE

All the versions of Kilo D6 are compliant with EN 50470-1 + 50470-3 as requested for obtaining the Energy Efficiency Certificates (White Certificates).

## ASTRONOMICAL CLOCK CALENDAR

The Kilo D6 H is equipped with a clock / calendar with astronomical real time management of the Coordinated Universal Time (UTC). It manages also the rules for the automatic switching from Standard Time at summer time (Daylight Saving Time) and vice versa. Automatic synchronization via NTP.

## BUILT-IN WEB SERVER - GATEWAY - DATALOGGER

Built-in WEB Server used for the configuration, via WEB Browser, of the Kilo Net and of the other devices in the sub-network. The HTTP communication can be used for the instantaneous readings and for accessing the memory logs. It is also an:

- FTP server for file transmissions;
- Modbus-TCP Server acting as a bridge between the Ethernet network (Modbus-TCP protocol for the instantaneous measures) and the RS485 port;
- Arbiter function between the Ethernet port (or Wi-Fi) and the expansion bus ExpBus (if other interfaces are used);
- Synchronization of the internal clock is made via NTP server;
- Static or dynamic IP address (DHCP protocol).

II Kilo net D6 PQ Web can record/log the trend over time of the energy/ environmental parameters retrieved by the Electrex devices connected in its RS485 port.

## DIGITAL, ANALOG, SENSOR I-O MODULES

The Kilo can be equipped with various, internal/external, digital, analog or sensor I-O modules as follows:

- 1DI 2DO: 1 digital input and 2 digital outputs;
- 1DI 2DO Self-Powered: 1 self powered digital input and 2 digital outputs;
- 2AO 4-20mA: 2 analog self-powered 4-20mA outputs;
- 2DI 1RO Self-Powered: 2 self-powered digital inputs and 1 relay (24VDC);
- 2RO24VDC: 2 relay outputs (24VDC);
- 2RO230V: 2 relay outputs (230V);
- 4DI: 4 digital inputs;
- 4DO: 4 digital outputs;
- 2DI 2DO: 2 digital inputs and 2 digital outputs;
- 4AI: 4 analog inputs 0÷10V ( 4÷20mA);
- 4PT-NTC: for PT100, PT1000 and NTC sensors;
- 4SI: for environmental sensors (T, H, L, etc);

The .. 2DO or 4DO or 1RO or 2RO version outputs can be related to the internal alarms. Each alarm can be linked to any one of the parameters available, for example, either as a minimum and/or as a maximum. All the alarm outputs can be linked to the same parameter.

## ADDITIONAL FUNCTIONS - PUK CODE ENTRY

Further functions can be activated on the Kilo net via PUK code entry using the internal Web interface:

## NET UPGRADE WEB

Enables the display of measures on web pages for itself and each instrument connected to the RS485 port of the Kilo net.

## NET UPGRADE OPEN WEB

Adds to the Kilo net the ability to upload and display custom Web pages.

## NET UPGRADE CHARTS

Allows to display on a web page charts, of electricity, temperature, humidity, luminosity, etc. obtained from the files stored in the Kilo net with the possibility to export to CSV files.

## NET UPGRADE ENERGY AUTOMATION

Adds the ability to manage Energy Automation tasks using the Ladder programming language for implementing ON/OFF switches, alarm and notifications and automations related to events and/or calendars (the Calendars option must be active) and/or the sending of e-mail/sms (E-Mail / SMS option must be active).

## UPGRADE CALENDARS

Allows to create calendars to be used for the time tariffs and / or in combination with the Energy Automation option (if active).

## UPGRADE E-MAIL / SMS

Adds the function of sending notification / alarm emails (and/or SMS by adding a specific modem/router). It can also be used in combination with the Energy Automation option (if active).

## NET UPGRADE FILES SENDING

Send / push into a remote FTP server an Xml standard file (customizable on request) containing data stored in the log services. Adding the PUK Energy Automation it is possible to relate the sending of the file with also complex events/scenarios.